789 N. Dixboro Rd,
Ann Arbor, Michigan
48105-9753 USA

T +1 734 769 8010
E standards@nsf.org
nsf.org

Joint Committee on Drinking Water Additives – Treatment Chemicals

May 9, 2024

Proposed revision to NSF/ANSI/CAN 60 – Drinking Water Treatment Chemicals – Health Effects (60i102r1)

Revision 1 of NSF/ANSI/CAN 60, issue 102 is being forwarded to the Joint Committee for consideration. Please review the proposal and **submit your ballot by May 30, 2024** via the NSF Online Workspace.

Please review all ballot materials. When adding comments, please include the section number applicable to your comment and add all comments under one comment number whenever possible. If you need additional space, please use the attached blank comment template in the reference documents and upload online via the browse function.

Purpose

The proposed revision will correct a calculation error in Section 6.3 and remove duplicate language, combine inorganics and organics in Section N-1.4 to minimize redundancy, and remove language that mistakenly calls for two different dilutions in Section N-1.4.3.1.4.1.

Background

A thorough review was completed by DLA Aviation which led to the revision and proposed updates to eliminate repetitive and contradictory text.

If you have any questions about the technical content of the ballot, you may contact me in care of:

France Lemieux, Chair
Joint Committee on Drinking Water Additives – Treatment Chemicals
c/o Amy Jump, Joint Committee Secretariat
T (313) 426-4918
E ajump@nsf.org@nsf.org

Note – the recommended changes to the standard which include the current text of the relevant section(s) indicate deletions by use of ~~strikeout~~ and additions by grey highlighting. Rationale Statements are in *italics* and only used to add clarity; these statements will NOT be in the finished publication.]

NSF/ANSI/CAN Standard
for Drinking Water Additives –

Drinking Water Treatment Chemicals –
Health Effects

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6 Disinfection and oxidation chemicals

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6.3 General requirements

6.3.1 General information about the products covered in this section is summarized in Table 6.2.

6.3.2 Hypochlorite treatment chemicals

Bromate is a known contaminant of the hypochlorite chemical production process. Based on the limited number of sources of bromate in drinking water (ozonation is another known source), the SPAC for bromate has been determined to be 0.0033 mg/L, 33% ~~30%~~ of the U.S. EPA maximum contaminant level (MCL) of 0.010 mg/L. All hypochlorite treatment chemicals shall meet the bromate SPAC of 0.0033 mg/L.

~~**6.3.2.1** Bromate is a known impurity of the hypochlorite chemical production process. Because of the potential cancer risk associated with human exposure to bromate, it is recommended that production or introduction of bromate into drinking water be limited. The two major sources of bromate in drinking water are ozonation of water containing bromide and use of hypochlorite treatment chemicals containing bromate (sodium and calcium hypochlorites). All hypochlorite treatment chemicals shall meet the bromate SPAC of 0.0033 mg/L.~~

Although the MUL may be less than 10 mg/L of Cl_2, it shall not be less than 2 mg/L of Cl_2.

Rationale: Removes duplicate language in Section 6.3.2.1 and corrects a calculation error.

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Normative Annex 1

(previously Annex B)

Sampling, preparation, and analysis of samples

N-1.4 Analysis methods

N-1.4.1 General

~~This section is divided into three parts: inorganics (metals and others), organics, and radionuclides.~~

N-1.4.2 Inorganics and Organics

~~N-1.4.2.1 Metals~~

Analyses for ~~metals,~~ inorganics (metals and others) and organics shall be performed in accordance with currently accepted U.S. EPA Methods (see 40 CFR Part 141), except as otherwise provided for herein. When no U.S. EPA method is provided, analyses shall be performed in accordance with *Standard Methods for the Examination of Water and Wastewater* (most current edition).

If neither of these references includes the required method, a method from another recognized source shall be allowed, and the method cited and validated. If no recognized method is available, a method shall be developed, provided the method is fully documented and validated, including all appropriate quality assurance procedures. The method used to determine the contaminant level shall have an analytical concentration range, such that the report limit is no greater than 50% of the lowest contaminant concentration being sought. Quality control standards shall be run at concentrations of 0.5, 1.0, 2.0, 5.0, and 10.0× the target limit.

~~N-1.4.2.2 Nonmetallic inorganics~~

~~Analyses for inorganics (other than metals) shall be performed in accordance with currently accepted U.S. EPA Methods (see 40 CFR Part 141), except as otherwise provided for herein. When no U.S. EPA method is provided, analyses shall be performed in accordance with *Standard Methods for the Examination of Water and Wastewater* (most current edition).~~

~~If neither of these references includes the required method, a method from another recognized source shall be allowed, and the method cited and validated. If no recognized method is available, a method shall be developed, provided the method is fully documented and validated, including all appropriate quality assurance procedures. The method used to determine the contaminant level shall have an analytical concentration range, such that the report limit is no greater than 50% of the lowest contaminant concentration being sought. Quality control standards shall be run at concentrations of 0.5, 1.0, 2.0, 5.0, and 10.0× the target limit.~~

N-1.4.2.2.1 Oxyhalides in hypochlorite

The analysis of bromate, chlorate and perchlorate shall be performed in accordance with Section N-1.4.2~~.2.~~ Selection of the method shall take into consideration the type of quenching agent used in order to minimize interference.

Spiked samples shall be processed with each analytical batch or every 10 samples, whichever is the greater number. A spiked sample shall be prepared for each hypochlorite type. The percent recovery of spiked samples shall be within 80% to 120%. Matrix spikes shall be performed in duplicate. The matrix spike, matrix spike duplicate shall have a calculated relative percent difference of ≤ 20%.

If the analytical methodology performed employs an internal standard or surrogate, the percent recovery criteria for either quality control compound shall be within 70% to 130%, or if outside that range, a sample spike performed and demonstrated a percent recovery of 80% to 120% obtained. For analytical methodologies not employing an internal standard or surrogate, spiked samples shall be processed with each analytical batch or every five samples, whichever is the greater number.

Blank samples shall be prepared using the same reagents and quantities used in the sample preparation, placed in vessels of the same type, and processed with the samples.

N-1.4.2.2.2 Bromide in sodium chloride

The analysis of bromide in sodium chloride shall be performed in accordance with Section N-1.4.2~~.2.~~

Spiked samples shall be processed with each analytical batch or every 10 samples, whichever is the greater number. A spiked sample shall be prepared for each batch. The percent recovery of spiked samples shall be within 80% to 120%. Matrix spikes shall be performed in duplicate. The matrix spike, matrix spike duplicate shall have a calculated relative percent difference of < 20%.

If the analytical methodology performed employs an internal standard or surrogate, the percent recovery criteria for either quality control compound shall be within 70% to 130%, or if outside that range, a sample spike performed and demonstrated a percent recovery of 80% to 120% obtained. Blank (control) samples shall be prepared using the same reagents and quantities used in the sample preparation, placed in vessels of the same type, and processed with the samples.

~~N-1.4.3 Organics~~

~~Analyses for organics shall be performed in accordance with currently accepted U.S. EPA Methods (see 40 CFR Part 141), except as otherwise provided for herein. When no U.S. EPA Method is provided, analyses shall be performed in accordance with *Standard Methods for the Examination of Water and Wastewater* (most current edition).~~

~~If neither of these references includes the required method, a method from another recognized source shall be allowed, and the method cited and validated. If no recognized method is available, a method shall be developed, provided the method is fully documented and validated, including all appropriate quality assurance procedures. The method used to determine the contaminant level shall have an analytical concentration range, such that the report limit is no greater than 50% of the lowest contaminant concentration being sought. Quality control standards shall be run at concentrations of 0.5, 1.0, 2.0, 5.0, and 10.0× the target limit.~~

Rationale: Combines inorganics and organics in Section 1.4 to minimize redundancy.

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N-1.4.3.1.4.1 Preparation of solutions

The following standards and solutions shall be prepared.

a) Prepare a stock solution of each compound of interest by weighing approximately 0.1 g of the neat material into a 10 mL volumetric flask, and dilute to volume with methylene chloride.

b) Prepare an internal standard stock solution by weighing 0.1 g 1,3-dichloroacetone into a 10 mL volumetric flask, and dilute to volume with methylene chloride.

c) Prepare a dilution standard at 1,000 µg/mL by adding the appropriate volumes of each stock standard to a 10 mL volumetric flask containing methylene chloride / isopropanol (1:1). ~~Add an appropriate volume of the internal standard stock solution to give a 1,3-dichloroacetone concentration of 100 µg/mL and~~ dilute to mark.

d) Prepare an extracting solution by weighing 0.0500 g of 1,3-dichloroacetone into a 500 mL volumetric flask and add 250 mL methylene chloride to dissolve. Dilute to mark with isopropanol. The resulting solution shall be used to prepare calibration standards and as the extracting solution for the polymer products.

e) Prepare five calibration standards at concentrations of 5.0, 10, 25, 50, and 200 µg/mL by serial dilution of the 1,000 µg/mL dilution standard using the extracting solution.

Rationale: Removes language that mistakenly calls for two different dilutions.

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N-1.4.34 Radionuclides

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